

I subjoin a list of the Parrots now known to inhabit the different islands of the group :—

CUBA.	JAMAICA.	ST. DOMINGO.
Ara tricolor?	Ara tricolor?	
Conurus euops.	Conurus nanus.	Conurus chloropterus.
Chrysotis leucocephala.	Chrysotis collaria.	Chrysotis Sallæi.
— cyanorhyncha?	Chrysotis jamaicensis?	
	— agilis.	
PORTO RICO.	ST. THOMAS.	ST. VINCENT.
Conurus Mangæi.	Conurus xantholæmus.	
Chrysotis vittata.		Chrysotis Guildingii.

## PROCEEDINGS OF LEARNED SOCIETIES.

### ROYAL SOCIETY.

March 24, 1859.—Sir Benjamin C. Brodie, Bart., President, in the Chair.

“On the Vertebral Characters of the Order Pterosauria (Ow.), as exemplified in the genera *Pterodactylus* (Cuv.) and *Dimorphodon* (Ow).” By Prof. Owen, F.R.S.

After mentioning various considerations which have tended to invest the question of the vertebral characters of the Pterodactyles with peculiar interest—above all, in reference to carrying out the comparison of their skeleton with that of birds—the author alludes to the scanty information on the subject already on record, which—with the exception of a remark of Professor Quenstedt as to the apparently procelian characters observed by him in a dorsal vertebra of *Pterodactylus Suevicus*, and the apparent want of the trochlear form in the cervical articulations of that animal—affords no available data for comparing the vertebral mechanism of these reptiles with that of other vertebrata adapted for flight; he then gives a summary of his own observations, made, as opportunities presented themselves, for some years past.

From investigations of species of *Pterosauria* extending from the period of the Lias, as exemplified by the *Dimorphodon macronyx*, to the upper greensand, as exemplified by the *Pterodactylus Sedgwickii* and *Pter. Fittoni*, the author has ascertained the fact that, with respect to the cervical and dorso-lumbar vertebræ, the terminal articular surfaces of the vertebral bodies are simply concave anteriorly and convex posteriorly, and that they consequently manifest the earliest known instance of the “procelian” type which now prevails in the reptilian class. But in no other reptile are those articular surfaces so narrow vertically, in proportion to their breadth, as they are in the cervical vertebræ of the *Pterosauria*: in the dorsal series the cup and ball present more ordinary Saurian proportions.

Besides these principal and more general characters, those also which distinguish the vertebrae of the several regions of the spine, together with the specialities of the atlas and axis, and of other individual vertebrae, are pointed out and described.

April 14, 1859.—Sir Benjamin C. Brodie, Bart, President, in the Chair.

“On the means by which the *Actiniæ* kill their Prey.” By Augustus Waller, M.D., F.R.S. In a Letter to Dr. Sharpey, Sec. R. S.

In the ‘Proceedings of the Royal Society’ for the 18th November, p. 478\*, I perceive that Dr. M'Donnell's fresh observations on the *Actiniæ* have led him to abandon the opinion which he had been disposed to entertain as to their possessing electrical powers similar to those of the torpedo. During a stay at the sea-side in the winter of 1857–58, I put in hand some experiments for the purpose of testing the supposed electrical powers of these animals, which, as I some months since mentioned to you, led me to negative conclusions relative to their siderant power. Dr. M'Donnell's recent observations having removed any occasion of controversy, I will briefly mention the results that I obtained.

The most interesting fact observed by Dr. M'Donnell is the contraction of the galvanoscopic frog when the *Actinia* seized upon the sciatic nerve. On repeating this experiment, I was particularly struck by the uncertainty and irregularity with which these contractions were obtained, being sometimes very strong, while at others they were imperceptible notwithstanding all the precautions that I could take as to the frogs being fresh caught and irritable, besides attending to the rules laid down by Matteucci.

On the other hand, when, in lieu of a galvanoscopic frog, I presented a *Nereis* to the *Actinia*, the result was invariably the death of the animal. The effect of the *Actinia*'s grasp upon the *Annulata* is mortal, although the retention may not have been allowed to exceed a few moments. The first symptom which I observed was that of writhing, as if the creature were in great pain, and which in the most marked cases was succeeded by paralysis with flaccidity of the muscles, like a frog acted upon by woorara. The action of the dorsal vessel, which still persisted long after the loss of voluntary power, was very irregular and segmental, the vessel being bloodless and inert at intervals.

It appeared indifferent whether the cephalic or the caudal extremity of the *Nereis* was attacked by the *Actinia*, similar symptoms being produced in both cases.

In order to ascertain how far these symptoms were produced by electricity, I subjected the *Nereis* enclosed in a glass tube to some violent shocks by means of an electro-magnetic machine, which were merely productive of a slight temporary inconvenience to the animal, unattended by any after evil effects. It is most remarkable what powerful electric action these creatures are susceptible of enduring

\* Ann. Nat. Hist. ser. 3. vol. iii. p. 304.

without injury; the strongest action of an electro-magnetic machine on Du Bois Reymond's principle, which affected myself violently up to the elbows, appeared to be easily endured by them.

The above experiment is quite sufficient to show how impossible it is to attribute the fatal influence of the Actiniæ to simple electrical action.

In order to elucidate the real power of the Actiniæ—after having in vain exposed the finger on which the cuticle had been softened by soaking in water—considering that the tongue was better adapted for the purpose in view, by reason of the thinness of its cuticle, I presented its apex to the tentacles of an *Actinia mesembryanthemum*, of about the size of a half-crown piece. The result was such as to satisfy the most sceptical respecting the offensive weapons with which it is furnished. The animal seized the organ most vigorously, and was detached from it with some difficulty after the lapse of about a minute. Immediately a pungent acrid pain commenced, which continued to increase for some minutes until it became extremely distressing. The point attacked felt inflamed and much swollen, although to the eye no change in the part could be detected. These symptoms continued unabated for about an hour, and a slight temporary relief was only obtained by immersing the tongue in cold or warm water. After this period the symptoms gradually abated, and about four hours later they had entirely disappeared. A day or two after, a very minute ulceration was perceived over the apex of the tongue, which disappeared after being touched with nitrate of silver.

I have subsequently frequently repeated this experiment on myself and others, using greater precaution, and have invariably obtained similar symptoms of urtication. In only one instance has a minute ulceration been the consequence.

It is very evident therefore that the Actiniæ act by means of an acrid irritant poison, similar in some respects to that of the wasp, or of snakes, which quickly spreads through the system of the Annelida, producing the above-mentioned results.

It remained to determine whether the poisoned weapons existing in such numbers over the surface of the Actiniæ were left in the part attacked. For this purpose I stretched a thin India-rubber membrane over a glass tube. After its seizure by the Actinia, I found that under the microscope it was studded in many points with the poison darts inserted slightly in the membrane, without their having penetrated through. In this respect my observations differ from those of Mr. Gosse, who considers that a fragment of cuticle from the hand was perforated by these darts.

May 19, 1859.—Major-General Sabine, R.A., Treas. and V.P.,  
in the Chair.

“On the Anatomy of *Victoria Regia*.” Part II. By Arthur Henfrey, Esq., F.R.S., F.L.S. &c., Professor of Botany in King's College, London.

This paper is a continuation of one published in the Philosophical Transactions for 1852 (p. 289), and discusses the general question



of the anatomical structure of the stems of Monocotyledons and Dicotyledons, especially in reference to some objections taken against the author's views respecting the stems of the Nymphæaceæ. Certain peculiarities of the structure of roots are next examined; and these are shown to be formed on the Dicotyledonous type in *Victoria*.

The germination of the seed is described in a manner differing to some extent from the accounts given by Planchon, Trécul, and Hooker. The error of Trécul, in stating that the earlier leaves are devoid of a stipule, is shown to depend upon his overlooking the true axillary position of that organ.

The Phyllotaxy is next treated, with the development and arrangement of the leaves and roots; lastly, a complete history of the development of the flower, showing that the apparently inferior position of the ovary depends upon a great enlargement of the receptacle after the formation of the various organs forming the flower.

May 26, 1859.—Sir Benjamin C. Brodie, Bart., President, in the Chair.

“On certain Sensory Organs in Insects, hitherto undescribed.”  
By J. Braxton Hicks, M.D. Lond., F.L.S. &c.

The author commences with an allusion to papers published in the Linnean Society's 'Journal' and 'Transactions' respecting groups of organs, abundantly supplied with nerves, on the bases of the halteres of Diptera, also on the nervures of the wings and on the elytra of Coleoptera, and now gives a drawing which shows forth these organs and the nerve proceeding to them on the halteres. He then describes, for the first time, somewhat similar organs on the apices of the palpi of some Diptera, and on their base in many Hymenoptera, as *Apis*, *Vespa*, *Nomada*, *Megachile*, *Bombus*, &c. These are well shown in the *Vespa Crabro*, or Hornet, where the nerve is seen expanding in the thin membrane which covers in the opening beneath in the wall of the member.

In the paper, also, it is pointed out for the first time, that on the apex of the palpi of Lepidoptera there is invariably found a structure which is more or less of a cavity, generally tubular, and sometimes extending inwards nearly the length of the last segment, but sometimes only a depression. To it a nerve is given which expands on the apex of the cavity.

The author then describes groups of organs, allied in form to those on the palpi, which are to be found on the legs of all insects yet examined. There are about three groups situated about the trochantero-femoral joint, and to them nerves can be distinctly seen proceeding; and in *Meloë* the branch is seen to pass up the opening in the wall, to terminate in a papilla in the centre of the membrane covering it in.

It is also shown that the bladder-like apex of the palpi, instead of being smooth, as is generally described, is covered with a great number of small bodies, something in form like ninepins, some-

times exceedingly small, requiring a  $\frac{1}{8}$ -inch objective to make them out, when they can clearly be discerned to be a modified condition of true hairs copiously supplied with nerves. The author names these “*tactile hairs*,” and points out their existence in all palpi used for touching, and in other organs subservient to that function. These tactile hairs are very large in the palpi and antennæ of *Dyticus marginalis*. The barrel-like organs of the Lepidoptera are next investigated, and are shown to have a nerve passing up them; but whether proceeding to the apex of the nipple-like papilla on them or not, cannot be quite made out. They are pointed out as being nearly allied to the organs on each of the palpi of the Earwig (*Forficula auricularia*).

The author refers to the sacs found on the antennæ of all insects, which have been fully treated of in two papers read by him before the Linnean Society, and published in their ‘Transactions;’ and he lastly examines the probable functions of all these organs, which must be of sensation, probably special.

Attention is also called to the value of bleaching the tissues by chlorine in investigating the structure of insects, which process was first used by the author and described by him in the papers above mentioned.

“On the Occurrence of Flint-implements, associated with the Remains of Extinct Mammalia, in Undisturbed Beds of a late Geological Period.” By Joseph Prestwich, Esq., F.R.S., F.G.S. &c.

The author commences by noticing how comparatively rare are the cases even of the alleged discovery of the remains of man or of his works in the various superficial drifts, notwithstanding the extent to which these deposits are worked; and of these few cases so many have been disproved, that man’s non-existence on the earth until after the latest geological changes, and the extinction of the Mammoth, Tichorhine Rhinoceros, and other great mammals, had come to be considered almost in the light of an established fact. Instances, however, have from time to time occurred to throw some doubt on this view, as the well-known cases of the human bones found by Dr. Schmerling in a cavern near Liege,—the remains of man, instanced by M. Marcel de Serres and others in several caverns in France,—the flint-implements in Kent’s Cave,—and many more. Some uncertainty, however, has always attached to cave-evidence, from the circumstance that man has often inhabited such places at a comparatively late period, and may have disturbed the original cave-deposit; or, after the period of his residence, the stalagmitic floor may have been broken up by natural causes, and the remains above and below it may have thus become mixed together, and afterwards sealed up by a second floor of stalagmite. Such instances of an imbedded broken stalagmitic floor are in fact known to occur; at the same time the author does not pretend to say that this will explain all cases of intermixture in caves, but that it lessens the value of the evidence from such sources.

The subject has, however, been latterly revived, and the evidence more carefully sifted by Dr. Falconer; and his preliminary reports on the Brixham Cave\*, presented last year to the Royal Society, announcing the carefully determined occurrence of worked flints mixed indiscriminately with the bones of the extinct Cave Bear and the Rhinoceros, attracted great and general attention amongst geologists. This remarkable discovery, and a letter written to him by Dr. Falconer on the occasion of his subsequent visit to Abbeville last autumn, instigated the author to turn his attention to other ground, which, from the interest of its later geological phenomena alone, as described by M. Buteux in his "Esquisse Géologique du Département de la Somme," he had long wished and intended to visit.

In 1849 M. Boucher de Perthes, President of the "Société d'Émulation" of Abbeville, published the first volume of a work entitled "Antiquités Celtiques et Antédiluviennes," in which he announced the important discovery of worked flints in beds of undisturbed sand and gravel containing the remains of extinct mammalia. Although treated from an antiquarian point of view, still the statement of the geological facts by this gentleman, with good sections by M. Ravin, is perfectly clear and consistent. Nevertheless, both in France and in England, his conclusions were generally considered erroneous; nor has he since obtained such verification of the phenomena as to cause so unexpected a fact to be accepted by men of science. There have, however, been some few exceptions to the general incredulity. The late Dr. Rigollot, of Amiens, urged by M. Boucher de Perthes, not only satisfied himself of the truth of the fact, but corroborated it, in 1855, by his "Mémoire sur des Instruments en Silex trouvés à St. Acheul." Some few geologists suggested further inquiry; whilst Dr. Falconer, himself convinced by M. de Perthes' explanations and specimens, warmly engaged Mr. Prestwich to examine the sections.

The author, who confesses that he undertook the inquiry full of doubt, went last Easter, first to Amiens, where he found, as described by Dr. Rigollot, the gravel-beds of St. Acheul capping a low chalk-hill a mile S.E. of the city, about 100 feet above the level of the Somme, and not commanded by any higher ground. The following is the succession of the beds in descending order:—

	Average thickness.
1. Brown brick-earth ( <i>many old tombs and some coins</i> ), with an irregular bed of flint-gravel. No organic remains.	10 to 15 ft.
<i>Divisional plane between 1 and 2a very uneven and indented.</i>	
2a. Whitish marl and sand with small chalk debris. Land and freshwater shells ( <i>Lymnea, Succinea, Helix, Bithynia, Planorbis, Pupa, Pisidium</i> , and <i>Ancylus</i> , all of recent species) are common, and mammalian bones and teeth are occasionally found .....	2 to 8 ft.

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\* On the 4th of May, this year, Dr. Falconer further communicated to the Geological Society some similar facts, though singularly varied, recently discovered by him in the Maccagnone Cave near Palermo.—See Proc. Geol. Soc.



Average thickness.

- 2b. Coarse subangular flint-gravel,—white with irregular ochreous and ferruginous seams,—with tertiary flint pebbles and small sandstone blocks. Remains of shells as above, in patches of sand. Teeth and bones of the elephant, and of a species of horse, ox, and deer,—generally near base. This bed is further remarkable for containing worked flints (“Haches” of M. de Perthes, and “Langues de Chat” of the workmen) ..... 6 to 12 ft.  
 Uneven surface of chalk.

The flint-implements are found in considerable numbers in 2b. On his first visit, the author obtained several specimens from the workmen, but he was not successful in finding any himself. On his arrival, however, at Abbeville, he received a message from M. Pinsard of Amiens, to whose cooperation he expresses himself much indebted, to inform him that one had been discovered the following day, and was left *in situ* for his inspection. On returning to the spot, this time with his friend Mr. Evans, he satisfied himself that it was truly *in situ*, 17 feet from the surface, in undisturbed ground, and he had a photographic sketch of the section taken\*.

Dr. Rigollot also mentions the occurrence in the gravel of round pieces of hard chalk, pierced through with a hole, which he considers were used as beads. The author found several, and recognized in them a small fossil sponge, the *Coscinopora globularis*, D'Orb., from the chalk, but does not feel quite satisfied about their artificial dressing. Some specimens do certainly appear as though the hole had been enlarged and completed.

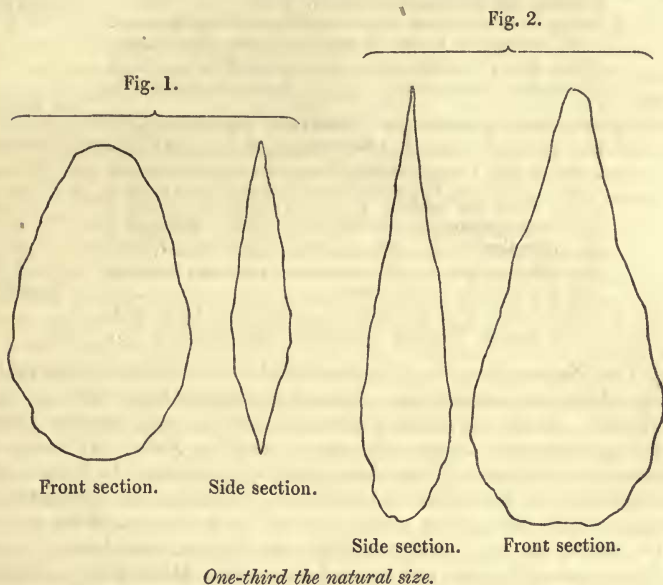
The only mammalian remains the author here obtained, were some specimens of the teeth of a horse—but whether recent or extinct the specimens were too imperfect to determine; and part of the tooth of an elephant (*Elephas primigenius*?). In the gravel-pit of St. Roch, 1½ mile distant, and on a lower level, mammalian remains are far more abundant, and include *Elephas primigenius*, *Rhinoceros tichorhinus*, *Cervus somonensis*, *Bos priscus*, and *Equus*†; but the workmen said that no worked flints were found there, although they are mentioned by Dr. Rigollot.

At Abbeville the author was much struck with the extent and beauty of M. Boucher de Perthes' collection. There were many forms of flints, in which he, however, failed to see traces of design or work, and which he should only consider as accidental; but with regard to those flint-instruments termed “axes” (“haches”) by M. de Perthes, he entertains not the slightest doubt of their artificial make. They are of two forms, generally from 4 to 10 inches long; the outlines of two specimens are represented in the following dia-

\* On revisiting the pit, since the reading of this paper, in company with several geological friends, the author was fortunate to witness the discovery and extraction by one of them, Mr. J. W. Flower, of a very perfect and fine specimen of flint-implement, in a seam of ochreous gravel, 20 feet beneath the surface. They besides obtained thirty-six specimens from the workmen.—June, 1859.

† To this list the author has to add the *Hippopotamus*, of which creature four fine tusks were obtained on this last visit.

gram. They are very rudely made, without any ground surface, and were the work of a people probably unacquainted with the use of metals. These implements are much rarer at Abbeville than at Amiens, fig. 1 being the common form at the former, and fig. 2 at



the latter place. The author was not fortunate enough to find any specimens himself; but from the experience of M. de Perthes, and the evidence of the workmen, as well as from the condition of the specimens themselves, he is fully satisfied of the correctness of that gentleman's opinion, that they there also occur in beds of undisturbed sand and gravel.

At Moulin Quignon, and at St. Gilles, to the S.E. of Abbeville, the deposit occurs, as at St. Acheul, on the top of a low hill, and consists of a subangular, ochreous and ferruginous flint-gravel, with a few irregular seams of sand, 12 to 15 feet thick, reposing upon an uneven surface of chalk. It contains no shells, and very few bones. M. de Perthes states that he has found fragments of the teeth of the elephant here. The worked flints and the bones occur generally in the lower part of the gravel.

In the bed of gravel also on which Abbeville stands, a number of flint-implements have been found, together with several teeth of the *Elephas primigenius*, and, at places, fragments of freshwater shells.

The section, however, of greatest interest is that at Menchecourt, a suburb to the N.W. of Abbeville. The deposit there is very distinct in its character; it occurs patched on the side of a chalk hill, which commands it to the northward; and it slopes down under



the peat-beds of the valley of the Somme to the southward. The deposit consists, in descending order, of—

	Average thickness.
1. A mass of brown sandy clay, with angular fragments of flints and chalk rubble. No organic remains. Base very irregular and indented into bed No. 2 .....	2 to 12 ft.
2. A light-coloured sandy clay ("sable gras" of the workmen), analogous to the loess, containing land shells, <i>Pupa</i> , <i>Helix</i> , <i>Clausilia</i> of recent species. Flint-axes and mammalian remains are said to occur occasionally in this bed .....	8 to 25 ft.
3. White sand ("sable aigre"), with 1 to 2 feet of subangular flint-gravel at base. This bed abounds in land and freshwater shells of recent species of the genera <i>Helix</i> , <i>Succinea</i> , <i>Cyclas</i> , <i>Pisidium</i> , <i>Valvata</i> , <i>Bithynia</i> , and <i>Planorbis</i> , together with the marine <i>Buccinum undatum</i> , <i>Cardium edule</i> , <i>Tellina solidula</i> , and <i>Purpura lapillus</i> . The author has also found the <i>Cyrena consobrina</i> and <i>Littorina rudis</i> . With them are associated numerous mammalian remains, and, it is said, flint-implements.....	2 to 6 ft.
4. Light-coloured sandy marl, in places very hard, with <i>Helix</i> , <i>Zonites</i> , <i>Succinea</i> , and <i>Pupa</i> . Not traversed .....	3 +

The Mammalian remains enumerated by M. Buteux from this pit are *Elephas primigenius*, *Rhinoceros tichorhinus*, *Cervus somonensis?*, *Cervus tarandus priscus*, *Ursus spelæus*, *Hyæna spelæa*, *Bos primigenius*, *Equus adamaticus*, and a *Felis*. It would be essential to determine how these fossils are distributed—which occur in bed No. 2, and which in bed No. 3. This has not hitherto been done. The few marine shells occur mixed indiscriminately with the freshwater species, chiefly amongst the flints at the base of No. 3. They are very friable and somewhat scarce. It is on the top of this bed of flints that the greater number of bones are found, and also, it is said, the greater number of flint-implements. The author, however, only saw some long flint flakes (considered by M. de Perthes as flint knives) turned out of this bed in his presence; but the workmanship was not very clear or apparent; still it was as much so as in some of the so-called flint knives from the peat-beds and barrows. There are specimens, however, of true implements ("haches") in M. de Perthes' collection from Menchecourt; one noticed by the author was from a depth of 5, and another of 7 metres. This would take them out from bed No. 1, but would leave it uncertain whether they came from No. 2 or No. 3. From their general appearance, and traces of the matrix, the author would be disposed to place them in bed No. 2, but M. de Perthes believes them to be from No. 3; if so, it must have been in some of the subordinate clay seams occasionally intercalated in the white sand.

Besides the concurrent testimony of all the workmen at the different pits, which the author after careful examination saw no reason to doubt, the flint-implements ("haches") bear upon themselves internal evidence of the truth of M. de Perthes' opinion. It is a peculiarity of fractured chalk flints to become deeply and permanently stained and coloured, or to be left unchanged, according to the nature of the matrix in which they are imbedded. In most clay

beds they become outside of a bright opaque white or porcelainic ; in white calcareous or siliceous sand their fractured black surfaces remain almost unchanged ; whilst in beds of ochreous and ferruginous sands, the flints are stained of the light yellow and deep brown colours so well exhibited in the common ochreous gravel of the neighbourhood of London. This change is the work of very long time, and of moisture before the opening out of the beds. Now in looking over the large series of flint-implements in M. de Perthes' collection, it cannot fail to strike the most casual observer that those from Menchecourt are almost always white and bright, whilst those from Moulin Quignon have a dull yellow and brown surface ; and it may be noticed that whenever (as is often the case) any of the matrix adheres to the flint, it is invariably of the same nature, texture, and colour as that of the respective beds themselves. In the same way at St. Acheul, where there are beds of white and others of ochreous gravel, the flint-implements exhibit corresponding variations in colour and adhering matrix ; added to which, as the white gravel contains chalk debris, there are portions of the gravel in which the flints are more or less coated with a film of deposited carbonate of lime ; and so it is with the flint-implements which occur in those portions of the gravel. Further, the surface of many specimens is covered with fine dendritic markings. Some few implements also show, like the fractured flints, traces of wear, their sharp edges being blunted. In fact, the flint-implements form just as much a constituent part of the gravel itself—exhibiting the action of the same later influences and in the same force and degree—as the rough mass of flint fragments with which they are associated.

With regard to the geological age of these beds, the author refers them to those usually designated as post-pliocene, and notices their agreement with many beds of that age in England. The Menchecourt deposit much resembles that of Fisherton near Salisbury ; the gravel of St. Acheul is like some on the Sussex coast ; and that of Moulin Quignon resembles the gravel at East Croydon, Wandsworth Common, and many places near London. The author even sees reason, from the general physical phenomena, to question whether the beds of St. Acheul and Moulin Quignon may not possibly be of an age one stage older than those of Menchecourt and St. Roch ; but before that point can be determined, a more extended knowledge of all the organic remains of the several deposits is indispensable.

The author next proceeds to inquire into the causes which led to the rejection of this and the cases before mentioned, and shows that in the case of M. de Perthes' discovery, it was in a great degree the small size and indifferent execution of the figures and the introduction of many forms about which there might reasonably be a difference of opinion ;—in the case of the arrow-heads in Kent's Cave a hidden error was merely suspected ;—and in the case of the Liege cavern he considers that the question was discussed on a false issue. He therefore is of opinion that these and many similar cases require reconsideration ; and that not only may some of these prove true, but that many others, kept back by doubt or supposed error, will be forthcoming.

One very remarkable instance has already been brought under the author's notice by Mr. Evans since their return from France. In the 13th volume of the 'Archæologia,' published in 1800, is a paper by Mr. John Frere, F.R.S. and F.S.A., entitled "An Account of Flint-Weapons discovered at Hoxne in Suffolk," wherein that gentleman gives a section of a brick-pit in which numerous flint-implements had been found, at a depth of 11 feet, in a bed of gravel containing bones of some unknown animal; and concludes from the ground being undisturbed and above the valley, that the specimens must be of very great antiquity, and anterior to the last changes of the surface of the country,—a very remarkable announcement, hitherto overlooked.

The author at once proceeded in search of this interesting locality, and found a section now exposed to consist of—

	feet.
1. Earth and a few flints .....	2
2. Brown brick-earth, a carbonaceous seam in middle and one of gravel at base; no organic remains. The workmen stated that two flint-implements (one of which they shortly picked up in the author's presence) had been found about 10 feet from the surface during the last winter .....	12
3. Grey clay, in places carbonaceous and in others sandy, with recent land and freshwater shells ( <i>Planorbis</i> , <i>Valvata</i> , <i>Succinea</i> , <i>Pisidium</i> , <i>Helix</i> , and <i>Cyclas</i> ) and bones of Mammalia .....	4
4. Small subangular flint-gravel and chalk pebbles .....	2½
5. Carbonaceous clay (stopped by water) .....	½+

The weapons referred to by Mr. Frere are described by him as being found abundantly in bed No. 4; but at the spot where the work has now arrived, this bed is much thinner, and is not worked. In the small trench which the author caused to be dug, he found no remains either of weapons or of bones. He saw, however, in the collection of Mr. T. E. Amyot, of Diss, specimens of the weapons, also an astragalus of the elephant from, it was supposed, this bed, and, from bed No. 3, the teeth of a horse, closely resembling those from the elephant-bed of Brighton.

The specimens of the weapons figured by Mr. Frere, and those now in the British Museum and elsewhere, present a singular similarity in work and shape to the more pointed forms from St. Acheul.

One very important fact connected with this section, is that it shows the relative age of the bone and implement-bearing beds. They form a thin lacustrine deposit, which seems to be superimposed on the Boulder Clay, and to pass under a bed of the ochreous sand and flint-gravel belonging to the great and latest drift-beds of the district.

The author purposely abstains for the present from all theoretical considerations, confining himself to the corroboration of the facts:—

1. That the flint-implements are the work of man.
2. That they were found in undisturbed ground.
3. That they are associated with the remains of extinct Mammalia.
4. That the period was a late geological one, and anterior to the surface assuming its present outline, so far as some of its minor features are concerned.



He does not, however, consider that the facts, as they at present stand, of necessity carry back Man in past time more than they bring forward the great extinct Mammals towards our own time, the evidence having reference only to relative and not to absolute time; and he is of opinion that many of the later geological changes may have been sudden or of shorter duration than generally considered. In fact, from the evidence here exhibited, and from all that he knows regarding drift phenomena generally, the author sees no reason against the conclusion that this period of Man and the extinct Mammals—supposing their contemporaneity to be proved—was brought to a sudden end by a temporary inundation of the land; on the contrary, he sees much to support such a view on purely geological considerations.

The paper concludes with a letter from Mr. John Evans, F.S.A. and F.G.S., regarding these implements from an antiquarian rather than a geological point of view, and dividing them into three classes:—

1. Flint flakes—arrow-heads or knives.

2. Pointed weapons truncated at one end, and probably lance or spear heads (fig. 2).

3. Oval or almond-shaped implements with a cutting edge all round, possibly used as sling-stones or as axes (fig. 1).

Mr. Evans points out that in form and workmanship those of the two last classes differed essentially from the implements of the so-called Celtic period, which are usually more or less ground and polished, and cut at the wide and not the narrow end; and that, had they been found under any circumstances, they must have been regarded as the work of some other race than the Celts or known aboriginal tribes. He fully concurs with Mr. Prestwich, that the beds of drift in which they were found were entirely undisturbed.

## MISCELLANEOUS.

### *Note on the Affinities of Rhynchosaurus.*

By Prof. RICHARD OWEN, F.R.S.

*To the Editors of the Annals and Magazine of Natural History.*

GENTLEMEN,—A second and better-preserved specimen of the rare fossil reptile, *Rhynchosaurus*, from the New Red Sandstone of Shropshire, having been lately obtained from the Grinsill quarries, near Shrewsbury, and kindly transmitted for my examination by the authorities of the Museum of Natural History of that town, I have been enabled to determine the position of the two nostrils a little in front of the orbits, and to discern traces of dental structure in parts of the two bodies which, in the original specimen described by me in 1842, held the place of, and were described as, “intermaxillary bones.” This discovery adds to the reasons for associating the *Rhynchosaurus* with the *Dicynodon*, in the same natural order or group